Luca Trapin

LIME Research Unit		Nationality:	Italian
IMT Institute for Advanced Studies Lucca		Birth:	16/12/1988
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Research interests

Financial Econometrics, Financial Economics, Statistics and Econometrics, Network Economics

Education

2013 – 2016 (Expected)	**PhD in Economics** IMT Institute for Advanced Studies Lucca (Italy) Supervisors: Prof. Massimo Riccaboni and Prof. Marco Bee
2010 – 2012	**M.S. in Finance** University of Trento (Italy)
2007 – 2010	**B.S. in Economics and Management** University of Trento (Italy)

Visiting positions

2014 – 2015	**HEC Montréal, Department of Management Science** Visiting Graduate Student Supervisor: Prof. Debbie J. Dupuis.
2011 (Fall)	**Maastricht University, School of Business and Economics** Exchange Program

Publications

Alessandro Chessa, Irene Crimaldi, Massimo Riccaboni and **Luca Trapin** (2014). Cluster analysis of weighted bipartite networks: A new copula-based approach. *PlosOne*, 9(10): e109507.

Working Papers

Luca Trapin. Extremal behaviour of financial returns and models (2015). *Job Market Paper*

In this paper, we add new evidence on the extremal behaviour of daily asset returns, finding that dependence in the extremes is strong and persistent in both tails of the return distribution, and also in the volatility process. We define a class of HF-based volatility processes, and study their extremal properties. Finally, we define an estimation strategy based on extreme moment conditions to estimate a continuous-time model able to replicate the observed pattern of extreme dependence.

Marco Bee, Debbie J. Dupuis and **Luca Trapin** (2015). Realizing the extremes: Estimation of tail-risk measures from a high-frequency perspective. *R&R Journal of Empirical Finance*.

In this article, we investigate whether the so called realized measures, obtained from high-frequency data, can improve the fit of the tails of the conditional returns distribution. We propose a two-step approach where returns are first pre-whitened with a high-frequency based volatility model, and then an Extreme Value Theory (EVT) based model is fitted to the tails of the standardized residuals. This realized EVT approach is compared to the conditional EVT technique which is considered the standard method of applying EVT in finance. We assess both approaches' ability of filtering the dependence in the extremes and of producing stable VaR and Expected Shortfall estimates for one- and ten-day time horizons. The main finding is that the realized EVT approach seems preferable, especially at longer time horizons.

Marco Bee, Debbie J. Dupuis and **Luca Trapin** (2015). U.S stock returns: Are there seasons of excesses?. *Submitted*.

This article explores the existence of seasonality in the tails of stock returns. We use a parametric model to describe the returns, and obtain a proxy of the innovation distribution via a pre-processing model. Then, we develop a change-point algorithm capturing changes in the tails of the innovations. We confirm the good performance of the procedure through extensive Monte Carlo experiments. An empirical investigation using US stocks data shows that while the lower tail of the innovations is approximately constant over the year, the upper tail is larger in Winter than in Summer, in nine out of 12 industries.

Marco Bee and **Luca Trapin** (2015). A simple approach to the estimation of Tukey's gh distribution. *Submitted*.

The Tukey's gh distribution is widely used in situations where skewness and elongation are important features of the data. As the distribution is defined through a quantile transformation of the normal, the likelihood function cannot be written in closed form and exact maximum likelihood estimation is unfeasible. In this paper we exploit a novel approach based on a frequentist reinterpretation of Approximate Bayesian Computation for approximating the maximum likelihood estimators of the gh distribution.

Marco Bee, Debbie J. Dupuis and **Luca Trapin** (2015). The realized peaks over threshold: A high-frequency extreme value approach for financial time series. *Submitted*.

This paper proposes a new class of dynamic extreme value models for daily asset returns that exploit information from high-frequency data. In-sample fit of these models on the S&P 500 index shows that time variation in the extremes of daily returns can be modelled through high frequency measures such as the realized variance. Moreover, we find that out-of-sample forecasts of conditional risk measures show good performance.

Work in Progress

Marco Bee, Massimo Riccaboni and **Luca Trapin**. An extreme value analysis of the last century crises across industries in the U.S. economy.

Although concerns regarding stock market crashes have increased in recent years, questions about the differences and commonalities exhibited by these events promoted a widespread debate. We perform an extreme value analysis of twelve U.S. sectors over the last century in order to assess whether the tails of their unconditional distribution changed differently after the occurrence of an extreme event. We find that the 1929 and 2007 crises largely differ in terms of pattern of diffusion across sectors, duration of the crisis and regime changes in both the positive and negative tails.

Luca Trapin. Dynamic tail risk and asset prices.

We develop a non-parametric estimator of time-varying tail risk based on high-frequency data. Exploiting a dataset recording the intra-day returns for the Dow Jones components, we investigate whether tail risk predicts market returns.

Conferences, Workshops and Seminars (*presented by co-author)

2015 9^{th} International Conference on Computational and Financial Econometrics (London)

2015 International Conference on Large-scale Crises: 1929 vs 2008* (Ancona)

2014 European Conference on Complex System* (Lucca)

Award and Scholarships

2013 Student Merit Award, University of Trento.

2013 Three-year PhD scholarship. Italian Ministry of Education.

References

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